

Type	L #	Hits	Search Text	DBs
1 BRS	L1	27716	RGB or (color adj LCD)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
2 BRS	L2	617	control near transmittance	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
3 BRS	L3	35	1 and 2	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
4 BRS	L4	21089	maximum near voltage	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
5 BRS	L5	1	3 and 4	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
6 BRS	L6	53713	transmittance	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
7 BRS	L7	26	4 and 6 and 1	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
8 BRS	L8	1358	transmittance adj characteristics	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
9 BRS	L10	21	9 and 345/\$.cc1s.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
10 BRS	L11	15	9 and 349/\$.cc1s.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
11 BRS	L12	31	9 and 349/\$.cc1s.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
12 BRS	L13	102004	voltage adj level	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB

Type	L #	Hits	Search Text	DBs
13 BRS	L14	8	8 and 13 and 2	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
14 BRS	L9	102	1 and 8	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
15 BRS	L15	4	1 and 8 and 4	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB

	Issue Date	Pages	Title	Document ID	Current OR	Current XRef
1	20030403	16	Liquid-crystal display device	US 20030063057 A1	345/87	
2	20020613.	17	COLOR LIQUID CRYSTAL DISPLAY	US 20020070911 A1	345/88	
3	19990420	36	Antiferroelectric liquid crystal display element and device, and method of driving the same	US 5895108 A	349/173	
4	19970520	35	Antiferroelectric liquid crystal display element exhibiting a precursor tilt phenomenon	US 5631752 A	349/173	349/172
5	19970415	17	Method of driving a liquid crystal display device	US 5621479 A	348/648	348/647; 348/791
6	19950328	49	Apparatus for method for logging, storing, and redirection of process related non-densitometric data generated by color processing equipment for use by an off site host computer	US 5402361 A	382/167	399/10
7	19920602	56	Automated strip reader densitometer	US 5118183 A	356/73	356/406;
8	19911105	38	Apparatus and method for pattern recognition	US 5062714 A	356/406	356/407; 356/419; 356/425; 356/73

	Issue Date	Page S	Title	Document ID	Current OR
1	20030923	66	Color filter layer providing transmitted light with improved brightness and display device using same	US 6624860 B1	349/106
2	20030916	13	Reflection type liquid crystal display	US 6621540 B2	349/113
3	20030819	8	Reflective liquid crystal display apparatus	US 6608659 B1	349/113
4	20030506	18	Reflective guest-host liquid-crystal display device	US 6559916 B1	349/113
5	20030401	7	Image projection system	US 6540359 B1	353/20
6	20030225	11	Nematic liquid crystal composition for active matrix application and reflective liquid crystal displays	US 6524666 B1	428/1.3
7	20020625	9	Manufacturing method for reflection type liquid crystal display	US 6410358 B1	438/29
8	20000905	56	Liquid crystal display apparatus	US 6115017 A	345/92
9	20000822	13	Reflective display having a laminated structure of a polarizer and quarter wave plate being attached to a light guide plate	US 6108059 A	349/65
10	20000118	16	Reflective guest-host liquid-crystal display device	US 6016178 A	349/117

	Issue Date	Page s	Title	Document ID	Current OR
11	19980707	25	Transparent electrodes for liquid cells and liquid crystal displays	US 5776594 A	428/212
12	19971125	60	Reflective liquid crystal display device and reflector	US 5691791 A	349/113
13	19960416	22	Transparent electrodes for liquid cells and liquid crystal displays	US 5508091 A	428/216

	Type	L #	Hits	Search Text	DBs
1	BRS	L1	670	345/88.cc1s.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
2	BRS	L2	621	345/88.cc1s.	USPAT; EPO; JPO; DERWENT; IBM_TDB
3	BRS	L3	13416	pixel adj electrode	USPAT; EPO; JPO; DERWENT; IBM_TDB
4	BRS	L4	56	2 and 3	USPAT; EPO; JPO; DERWENT; IBM_TDB
5	BRS	L5	1996	color near LCD	USPAT; EPO; JPO; DERWENT; IBM_TDB
6	BRS	L7	28418	349/\$.cc1s.	USPAT; EPO; JPO; DERWENT; IBM_TDB
7	BRS	L8	386	5 and 7	USPAT; EPO; JPO; DERWENT; IBM_TDB
8	BRS	L9	111	3 and 8	USPAT; EPO; JPO; DERWENT; IBM_TDB
9	BRS	L10	2013	345/87.cc1s.	USPAT; EPO; JPO; DERWENT; IBM_TDB
10	BRS	L11	8	3 and 5 and 10	USPAT; EPO; JPO; DERWENT; IBM_TDB
11	BRS	L12	0	RGB near (applied adj voltage)	USPAT; EPO; JPO; DERWENT; IBM_TDB
12	BRS	L13	1	RGB near (driving adj voltage)	USPAT; EPO; JPO; DERWENT; IBM_TDB
13	BRS	L6	28	RGB near LCD	USPAT; EPO; JPO; DERWENT; IBM_TDB
14	BRS	L17	19825	driving adj voltage	USPAT; EPO; JPO; DERWENT; IBM_TDB
15	BRS	L18	102	5 and 17	USPAT; EPO; JPO; DERWENT; IBM_TDB
16	BRS	L20	32	5 and 10	USPAT; EPO; JPO; DERWENT; IBM_TDB
17	BRS	L21	1432	transmittance near characteristics	USPAT; EPO; JPO; DERWENT; IBM_TDB

	Type	L #	Hits	Search Text	DBs
18	BRS	L22	1477	reflectance near characteristics	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
19	BRS	L23	66	RGB and 21	USPAT; EPO; JPO; DERWENT; IBM TDB
20	BRS	L25	1638	reflective adj display	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
21	BRS	L26	1008	reflection adj electrode	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
22	BRS	L27	21	25 and 26	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
23	BRS	L28	13	25 and 26	USPAT; EPO; JPO; DERWENT; IBM TDB

	Type	L #	Hits	Search Text	DBs
1	BRS	L1	670	345/88.cc1s.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
2	BRS	L2	621	345/88.cc1s.	USPAT; EPO; JPO; DERWENT; IBM TDB
3	BRS	L3	13416	pixel adj electrode	USPAT; EPO; JPO; DERWENT; IBM TDB
4	BRS	L4	56	2 and 3	USPAT; EPO; JPO; DERWENT; IBM TDB
5	BRS	L5	1996	color near LCD	USPAT; EPO; JPO; DERWENT; IBM TDB
6	BRS	L7	28418	349/\$.cc1s.	USPAT; EPO; JPO; DERWENT; IBM TDB
7	BRS	L8	386	5 and 7	USPAT; EPO; JPO; DERWENT; IBM TDB
8	BRS	L9	111	3 and 8	USPAT; EPO; JPO; DERWENT; IBM TDB
9	BRS	L10	2013	345/87.cc1s.	USPAT; EPO; JPO; DERWENT; IBM TDB
10	BRS	L11	8	3 and 5 and 10	USPAT; EPO; JPO; DERWENT; IBM TDB
11	BRS	L12	0	RGB near (applied adj voltage)	USPAT; EPO; JPO; DERWENT; IBM TDB
12	BRS	L13	1	RGB near (driving adj voltage)	USPAT; EPO; JPO; DERWENT; IBM TDB
13	BRS	L6	28	RGB near LCD	USPAT; EPO; JPO; DERWENT; IBM TDB
14	BRS	L17	19825	driving adj voltage	USPAT; EPO; JPO; DERWENT; IBM TDB
15	BRS	L18	102	5 and 17	USPAT; EPO; JPO; DERWENT; IBM TDB
16	BRS	L20	32	5 and 10	USPAT; EPO; JPO; DERWENT; IBM TDB
17	BRS	L21	1432	transmittance near characteristics	USPAT; EPO; JPO; DERWENT; IBM TDB

Type	L #	Hits	Search Text	DBs
18 BRS	L22	1477	reflectance near characteristics	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
19 BRS	L23	66	RGB and 21	USPAT; EPO; JPO; DERWENT; IBM TDB

	L #	Hits	Search Text	DBs
1	L1	261465	LCD or ( liquid adj crystal adj display)	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
2	L2	4233	RGB near signals	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
3	L3	705	(R adj light) and (G adj light) and (B adj light),	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
4	L4	675	control near transmittance	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
5	L5	7451	color adj reproducibility	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
6	L6	3	3 and 4 and 5	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
7	L7	84599	(driving adj voltage) or (applied adj voltage)	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
8	L8	42612	range and 7	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
9	L9	82	4 and 8	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
10	L10	10	3 and 9	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
11	L11	3849	(345/87-89).cc1s.	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
12	L12	594	(345/102).cc1s.	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB

	L #	Hits	Search Text	DBs
13	L13	1386	(345/204) .cc1s.	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
14	L14	630	(345/55) .cc1s.	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
15	L15	6202	11 or 12 or 13 or 14	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
16	L16	24	1 and 4 and 15	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
17	L17	2	5128782.pn.	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
18	L18	70	1 and 4 and 7	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
19	L19	14	3 and 4	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
20	L20	783	electrically adj controlled adj birefringence	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
21	L21	20	4 and 20	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
22	L23	2347	ECB or 20 and 15	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
23	L24	389	7 and 23	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
24	L25	948	reflective adj LCD	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB

		L #	Hits	Search Text	DBs
25	L27	0	25 and 26 and 4	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	
26	L28	1	25 and 26 and 3	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	
27	L26	645	(reflective adj electrode) and ( transparent adj electrode)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	
28	L30	0	15 and 29	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	
29	L29	80	25 and 26	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	
30	L31	33	25 and 26	USPAT; JPO; DERWENT	
31	L32	94	(transparent adj electrode) and 25	USPAT; JPO; DERWENT	
32	L33	0	2 and 32	USPAT; JPO; DERWENT	
33	L34	42126	(common adj electrode) or (counter adj electrode)	USPAT; JPO; DERWENT	
34	L35	54	1 and 3 and 34	USPAT; JPO; DERWENT	
35	L36	114372	upper adj limit	USPAT; JPO; DERWENT	
36	L37	3454	7 and 36	USPAT; JPO; DERWENT; IBM_TDB	
37	L38	10	4 and 37	USPAT; JPO; DERWENT; IBM_TDB	

	L #	Hits	Search Text	DBs
38	L39	737	transmittance adj curve	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM_TDB
39	L40	1736	transmittance near characteristics	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM_TDB
40	L41	64	5 and 40	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM_TDB
41	L42	22	5 and 39	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM_TDB
42	L43	4	25 and 40	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM_TDB
43	L45	8	25 and 44	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM_TDB
44	L44	374	(reflection adj electrode) and (transparent adj electrode)	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM_TDB
45	L46	259	(reflection adj electrode) and (transparent adj electrode)	USPAT; EPO; JPO; DERWENT; IBM_TDB
46	L47	94	(transparent adj electrode) and 25	USPAT; EPO; JPO; DERWENT; IBM_TDB
47	L48	98	20 and 34	USPAT; JPO; DERWENT
48	L49	17	(39 or 40) and 1 and 2	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM_TDB
49	L50	495	luminance adj characteristic	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM_TDB

	L #	Hits	Search Text	DBs
50	L51	5	1 and 2 and 50	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
51	L52	64	transmittance and 1 and 2	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB

	L #	Hits	Search Text	DBs
1	L1	7	maximum adj transmittance adj voltage	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
2	L2	1071	maximum adj transmittance	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
3	L3	2572	color near LCD	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
4	L4	28971	RGB	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
5	L5	67	2 and (3 or 4)	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
6	L6	7867	color near reproducibility	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
7	L7	4	5 and 6	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
8	L8	14446	transmittance and voltage	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
9	L9	281	6 and 8	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
10	L10	3112	(345/87-88) .cc1s.	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
11	L11	594	(345/102) .cc1s.	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
12	L12	31253	349/\$ .cc1s.	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB

	L #	Hits	Search Text	DBs
13	L13	90	9 and 12	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
14	L14	30	9 and 345 /\$ .cc1s .	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
15	L15	3194	transmittance and (applied adj voltage)	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
16	L16	567	15 and 345 /\$ .cc1s .	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
17	L17	105	4 and 16	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
18	L18	21	6 and 16	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
19	L20	5	2 and 18	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
20	L21	2574	R adj light	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
21	L22	7330	G adj light	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
22	L23	11338	B adj light	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
23	L24	705	21 and 22 and 23	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
24	L25	17	2 and 24	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB

	L #	Hits	Search Text	DBs
25	L26	1736	transmittance near characteristics	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
26	L27	23	24 and 26	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
27	L28	258	345/101.cc1s.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
28	L29	261465	LCD or (liquid adj crystal adj display)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB

Issue Date	Page s	Title	Document ID	Current OR	Current XRef
20030703	7	Thermostat With One Button Programming Feature	US 20030121652 A1	165/238	236/46R
19920218	16	Color liquid crystal display system with spacer-adhesive and separate rigid spacers across display surface	US 5089905 A	349/97	349/155; 349/172

	L #	Hits	Search Text	DBs
1	L1	261465	LCD or ( liquid adj crystal adj display)	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
2	L2	4233	RGB near signals	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
3	L3	705	(R adj light) and (G adj light) and (B adj light)	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
4	L4	675	control near transmittance	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
5	L5	7451	color adj reproducibility	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
6	L6	3	3 and 4 and 5	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
7	L7	84599	(driving adj voltage) or (applied adj voltage)	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
8	L8	42612	range and 7	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
9	L9	82	4 and 8	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
10	L10	10	3 and 9	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
11	L11	3849	(345/87-89) .cc1s.	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
12	L12	594	(345/102) .cc1s.	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB

	L #	Hits	Search Text	DBs
13	L13	1386	(345/204) .cc1s.	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
14	L14	630	(345/55) .cc1s.	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
15	L15	6202	11 or 12 or 13 or 14	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
16	L16	24	1 and 4 and 15	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
17	L17	2	5128782 .pn.	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
18	L18	70	1 and 4 and 7	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
19	L19	14	3 and 4	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
20	L20	783	electrically adj controlled adj birefringence	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
21	L21	20	4 and 20	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
22	L23	2347	ECB or 20 and 15	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
23	L24	389	7 and 23	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
24	L25	948	reflective adj LCD	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB

	L #	Hits	Search Text	DBs
25	L27	0	25 and 26 and 4	USPAT; US -PGPUB; EPO; JPO; DERWENT; IBM_TDB
26	L28	1	25 and 26 and 3	USPAT; US -PGPUB; EPO; JPO; DERWENT; IBM_TDB
27	L26	645	(reflective adj electrode) and ( transparent adj electrode)	USPAT; US -PGPUB; EPO; JPO; DERWENT; IBM_TDB
28	L30	0	15 and 29	USPAT; US -PGPUB; EPO; JPO; DERWENT; IBM_TDB
29	L29	80	25 and 26	USPAT; US -PGPUB; EPO; JPO; DERWENT; IBM_TDB
30	L31	33	25 and 26	USPAT; JPO; DERWENT
31	L32	94	(transparent adj electrode) and 25	USPAT; JPO; DERWENT
32	L33	0	2 and 32	USPAT; JPO; DERWENT
33	L34	42126	(common adj electrode) or (counter adj electrode)	USPAT; JPO; DERWENT
34	L35	54	1 and 3 and 34	USPAT; JPO; DERWENT
35	L36	114372	upper adj limit	USPAT; JPO; DERWENT
36	L37	3454	7 and 36	USPAT; US -PGPUB; EPO; JPO; DERWENT; IBM_TDB
37	L38	10	4 and 37	USPAT; US -PGPUB; EPO; JPO; DERWENT; IBM_TDB

		Hits	Search Text	DBs
38	L39	737	transmittance adj curve	USPAT; US - PGPUB; EPO; JPO; DERWENT; IBM TDB
39	L40	1736	transmittance near characteristics	USPAT; US - PGPUB; EPO; JPO; DERWENT; IBM TDB
40	L41	64	5 and 40	USPAT; US - PGPUB; EPO; JPO; DERWENT; IBM TDB
41	L42	22	5 and 39	USPAT; US - PGPUB; EPO; JPO; DERWENT; IBM TDB
42	L43	4	25 and 40	USPAT; US - PGPUB; EPO; JPO; DERWENT; IBM TDB
43	L45	8	25 and 44	USPAT; US - PGPUB; EPO; JPO; DERWENT; IBM TDB
44	L44	374	(reflection adj (electrode) and (transparent adj (electrode))	USPAT; US - PGPUB; EPO; JPO; DERWENT; IBM TDB
45	L46	259	(reflection adj electrode) and adj (transparent adj electrode)	USPAT; EPO; JPO; DERWENT; IBM TDB
46	L47	94	(transparent adj electrode) and 25	USPAT; EPO; JPO; DERWENT; IBM TDB
47	L48	98	20 and 34	USPAT; JPO; DERWENT
48	L49	17	(39 or 40) and 1 and 2	USPAT; US - PGPUB; EPO; JPO; DERWENT; IBM TDB
49	L50	495	luminance adj characteristic	USPAT; US - PGPUB; EPO; JPO; DERWENT; IBM TDB

	L #	Hits	Search Text	DBs
50	L51	5	1 and 2 and 50	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
51	L52	64	transmittance and 1 and 2	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
52	L53	80	(345/88) .ccls. and transmittance	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
53	L54	162	(345/89) .ccls. and transmittance	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
54	L55	122	(345/89) .ccls. and transmittance	USPAT; EPO; JPO; DERWENT; IBM TDB
55	L56	130	2 and transmittance	USPAT; JPO; DERWENT; IBM TDB
56	L57	77	2 and transmittance	USPAT; EPO; JPO; DERWENT; IBM TDB
57	L58	5	2 and 39	USPAT; EPO; JPO; DERWENT; IBM TDB

	L #	Hits	Search Text	DBs
1	L1	948	reflective adj LCD	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
2	L2	1144	reflective adj electrode	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
3	L4	46	1 and 2	USPAT; EPO; JPO
4	L5	27	transmittance and 4	USPAT; EPO; JPO
5	L6	1	6195140.pn.	USPAT; EPO; JPO
6	L7	2	5771083.pn.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
7	L8	360	reflective adj LCD	USPAT
8	L9	8734	common adj electrode	USPAT
9	L10	0	transmittance adj voltage adj limiting adj circuit	USPAT
10	L11	0	(transmittance adj voltage) and (limiting adj circuit\$3)	USPAT
11	L3	127	1 and 2	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB

	Issue Date	Page #	Title	Document ID	Current OR	Current XRef
1	20020613	17	COLOR LIQUID CRYSTAL DISPLAY	US 20020070911 A1	345/88	257/E27.111
2	20020606	46	IMAGE DISPLAY DEVICE, SEMICONDUCTOR DEVICE AND OPTICAL EQUIPMENT	US 20020067419 A1	348/333.03	348/333.01
3	20011011	16	Liquid crystal display	US 20010028430 A1	349/139	
4	20011016	17	Liquid crystal display having an off driving voltage greater than either zero or an optical characteristics changing voltage	US 6304304 B1	349/33	345/94
5	20001017	47	Driving method for optical apparatus	US 6133894 A	345/89	345/87; 349/25
6	20000314	40	Optical modulation or image display system	US 6037922 A	345/89	349/25
7	19990720	47	Image display device, semiconductor device and optical element	US 5926238 A	349/61	250/330; 250/331; 349/104; 349/116
8	19990105	44	Driving method for display apparatus	US 5856814 A	345/89	345/87; 349/25
9	19970128	58	Display apparatus	US 5597223 A	353/97	349/61; 353/101
10	19960521	55	Display apparatus with a variable aperture stop means on each side of the modulator	US 5519518 A	349/57	349/62

# United States Patent [19]

US06637922A

[11] Patent Number: 6,037,922

Yagyu

[14] Date of Patent: Mar. 14, 2000

## [54] OPTICAL MODULATION OR IMAGE DISPLAY SYSTEM

[75] Inventor: Mineo Yagyu, Sagamihara, Japan

[73] Assignee: Canon Kabushiki Kaisha, Tokyo, Japan

[21] Appl. No.: 08/661,958

[22] Filed: Jun. 12, 1996

[30] Foreign Application Priority Data

Jun. 15, 1995 [JP] Japan 7-148793

Jun. 16, 1995 [JP] Japan 7-150280

Jun. 26, 1995 [JP] Japan 7-159428

[51] Int. Cl. 7

U.S. Cl. 345/89, 349/25

Field of Search 349/75, 31, 365/108, 353/31, 348/739

## [56] References Cited

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4,191,456 3/1980 Hong et al. 353/31  
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4,709,995 12/1987 Kurabayashi et al. 350/350 S  
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5,172,257 12/1992 Patel 359/84

## [57] ABSTRACT

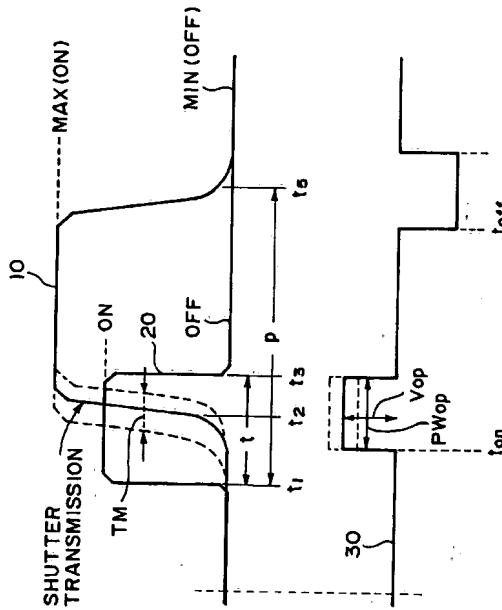
An optical modulation unit is constituted by a light source periodically turned on, and an optical modulation means including an optical modulation element and periodically turned on. The optical modulation unit is driven by changing a voltage applied to the optical modulation element depending on given graduation data so as to modulate an overlapping time between an ON period of the optical modulation means and a lighting period of the light source. The graduation data may be analog graduation data and may be carried by light illuminating the optical modulation element synchronized with a voltage applied to the optical modulation element.

[58] [59] [60]

510 10  
SHUTTER TRANSMISSION  
TM  
ON  
OFF  
P  
t1 t2 t3 t4 t5  
30  
Vop  
PWop  
ton  
toff

[57] [58] [59] [60]

MIN(OFF)



[61] [62] [63] [64]

62 Claims, 21 Drawing Sheets

	Issue Date	Page s	Title	Document ID	Current OR	Current XRef
1	20031009	14	Method and apparatus for preventing residual image in liquid crystal display	US 20030189564 A1	345/212	345/698; 345/88
2	20030911	99	Display device having improved drive circuit and method of driving same	US 20030169247 A1	345/204	
3	20030828	26	Liquid crystal display apparatus and liquid crystal display driving method	US 20030160751 A1	345/89	345/90
4	20030515	10	Backlit display with improved dynamic range	US 20030090455 A1	345/102	
5	20030403	21	Image display device	US 20030063062 A1	345/102	
6	20030403	16	Liquid-crystal display device	US 20030063057 A1	345/87	
7	20021205	108	Display device method of driving same and electronic device mounting same	US 20020180673 A1	345/87	
8	20020613	17	COLOR LIQUID CRYSTAL DISPLAY	US 20020070911 A1	345/88	257/E27.111
9	20020502	27	LIQUID CRYSTAL DISPLAY APPARATUS HAVING LIGHT COLLECTING MECHANISM	US 20020050974 A1	345/102	
10	20030520	25	Liquid crystal display apparatus and liquid crystal display driving method	US 6567062 B1	345/92	345/89

Issue Date	Page	Title	Document ID	Current OR	Current XRef
					345/101; 345/204; 345/206; 345/214; 345/92; 345/93; 345/94; 345/97; 345/98; 345/99; 349/172; 349/174; 349/33; 349/38
11 20021217	29	Liquid crystal apparatus	US 6496170 B1	345/87	
12 20020514	44	Spatial light modulator and a method for driving the same	US 6388649 B1	345/89	345/94; 345/97
13 20001017	47	Driving method for optical apparatus	US 6133894 A	345/89	345/87; 349/25
14 20000912	22	Light scattering type liquid crystal display device, and method for driving it	US 6118422 A	345/94	345/87
15 20000509	29	Liquid crystal display device	US 6061042 A	345/87	349/130; 349/177
16 20000502	71	Liquid crystal display device having bistable nematic liquid crystal and method of driving the same	US 6057817 A	345/94	345/87; 349/128
17 20000314	60	Bistable nematic liquid crystal which remains tilted in first and second states and which is tilted according to driving voltage	US 6038001 A	349/33	345/89; 345/95; 345/96; 349/177; 349/85
18 20000314	40	Optical modulation or image display system	US 6037922 A	345/89	349/25

Issue Date	Page s	Title	Document ID	Current OR	Current XRef
19991123	36	Shift register having a plurality of circuit blocks and image display apparatus using the shift register	US 5990857 A	345/98	345/100; 345/204; 345/213
19990105	44	Driving method for display apparatus	US 5856814 A	345/89	345/87; 349/25
19951121	59	Driving method for liquid crystal device which is not affected by a threshold characteristic change	US 5469281 A	345/89	345/97
19951024	18	Display device with a light shutter front end unit and gas discharge back end unit	US 5461397 A	345/102	345/5; 345/6
19911029	12	Ferroelectric liquid crystal display having opposingly inclined alignment films wherein the liquid crystal has one twisted and two aligned states which coexist and a driving method to produce gray scale	US 5061044 A	349/133	345/89; 345/97; 349/128; 349/37
19940428	44	DISPLAY DEVICE AND ITS DRIVE METHOD	WO 9409475 A1		345/87

	Issue Date	Page s	Title	Document ID	Current OR	Current XRef
1	20020613	17	COLOR LIQUID CRYSTAL DISPLAY IMAGE DISPLAY DEVICE, SEMICONDUCTOR DEVICE AND OPTICAL EQUIPMENT	US 20020070911 A1	345/88	257/E27.111
2	20020606	46	Image display apparatus by projector	US 20020067419 A1	348/333.03	348/333.01
3	20011206	14	Liquid crystal display	US 20010048432 A1	345/213	
4	20011011	16	Liquid crystal display having an off driving voltage greater than either zero or an optical characteristics changing voltage	US 20010028430 A1	349/139	
5	20011016	17	Driving method for optical apparatus	US 6304304 B1	349/33	345/94
6	200001017	47	Optical modulation or image display system	US 6133894 A	345/89	345/87; 349/25
7	20000314	40	Liquid crystal projector and method of driving the projector	US 6037922 A	345/89	349/25
8	20000201	10	Projection-type display apparatus	US 6020940 A	349/8	353/49
9	19991109	37	Image display device, semiconductor device and optical element	US 5982563 A	359/727	353/98; 355/67
10	19990720	47	Driving method for display apparatus	US 5926238 A	349/61	250/330; 250/331; 349/104; 349/116
11	19990105	44	Projection-type display apparatus	US 5856814 A	345/89	345/87; 349/25
12	19980707	40	Display apparatus	US 5777804 A	359/727	349/4; 353/98; 355/67
13	19970128	58	Display apparatus	US 5597223 A	353/97	349/61; 353/101

Issue Date	Page #	Title	Document ID	Current OR	Current XRef
14 19960521	55	Display apparatus with a variable aperture stop means on each side of the modulator	US 5519518 A	349/57	349/62

	Issue Date	Page s	Title	Document ID	Current OR	Current XRef
1	20031014	65	Liquid crystal display and method for fabricating the same	US 6633356 B1	349/129	
2	20021217	29	Liquid crystal apparatus	US 6496170 B1	345/87	
3	20021203	15	Vertical alignment liquid crystal display having improved driving voltage control	US 6490013 B2	349/33	345/94
4	20020910	77	Busbars for electrically powered cells	US 6449082 B1	359/275	250/214SG;
5	20011113	75	Busbars for electrically powered cells	US 6317248 B1	359/265	345/105;
6	20011016	17	Liquid crystal display having an off driving voltage greater than either zero or an optical characteristics changing voltage	US 6304304 B1	349/33	345/94

Issue Date	Page #	Title	Document ID	Current OR	Current XRef
20000314	20	Active matrix liquid crystal display for projection system	US 6038004 A	349/44	349/139; 349/38; 349/42; 349/43; 359/333
19970128	58	Display apparatus	US 5597223 A	353/97	349/61; 353/101
19960521	55	Display apparatus with a variable aperture stop means on each side of the modulator	US 5519518 A	349/57	349/62
19911029	12	Ferroelectric liquid crystal display having opposingly inclined alignment films wherein the liquid crystal has one twisted and two aligned states which coexist and a driving method to produce gray scale	US 5061044 A	349/133	345/89; 345/97; 349/128; 349/37

	L #	Hits	Search Text	DBs
1	L1	261465	LCD or ( liquid adj crystal adj display)	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
2	L2	4233	RGB near signals	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
3	L3	705	(R adj light) and (G adj light) and (B adj light)	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
4	L4	675	control near transmittance	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
5	L5	7451	color adj reproducibility	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
6	L6	3	3 and 4 and 5	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
7	L7	84599	(driving adj voltage) or (applied adj voltage)	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
8	L8	42612	range and 7	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
9	L9	82	4 and 8	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
10	L10	10	3 and 9	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
11	L11	3849	(345/87-89) .cc1s.	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB
12	L12	594	(345/102) .cc1s.	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB

	L #	Hits	Search Text	DBs
13	L13	1386	(345/204) .cc1s.	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
14	L14	630	(345/55) .cc1s.	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
15	L15	6202	11 or 12 or 13 or 14	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
16	L16	24	1 and 4 and 15	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
17	L17	2	5128782 .pn.	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
18	L18	70	1 and 4 and 7	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
19	L19	14	3 and 4	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
20	L20	783	electrically adj controlled adj birefringence	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
21	L21	20	4 and 20	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
22	L23	2347	ECB or 20 and 15	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
23	L24	389	7 and 23	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB
24	L25	948	reflective adj LCD	USPAT; US- PGPUB; EPO; JPO; DERWENT; IBM TDB

	L #	Hits	Search Text	DBs
25	L27	0	25 and 26 and 4	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
26	L28	1	25 and 26 and 3	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
27	L26	645	(reflective adj electrode) and ( transparent adj electrode)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
28	L30	0	15 and 29	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
29	L29	80	25 and 26	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
30	L31	33	25 and 26	USPAT; JPO; DERWENT
31	L32	94	(transparent adj electrode) and 25	USPAT; JPO; DERWENT
32	L33	0	2 and 32	USPAT; JPO; DERWENT
33	L34	42126	(common adj (counter adj electrode) or (counter adj electrode)	USPAT; JPO; DERWENT
34	L35	54	1 and 3 and 34	USPAT; JPO; DERWENT
35	L36	114372	upper adj limit	USPAT; JPO; DERWENT
36	L37	3454	7 and 36	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
37	L38	10	4 and 37	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB

Issue Date	Page #	Title	Document ID	Current OR	Current XRef
20020124	10	LIQUID CRYSTAL DISPLAY DEVICE	US 20020008835 A1	349/155	
20020103	22	Driving method for liquid crystal device	US 20020000962 A1	345/87	
20030729	21	Flat panel display architecture	US 6600467 B1	345/87	345/4
20010710	34	Electro-optical apparatus having antiferroelectric liquid crystal panel with normalization to prevent white brightening	US 6259492 B1	349/33	349/174
19990713	21	Liquid crystal display	US 5922242 A	252/299.62	252/299.01; 349/143; 349/182
19840410	26	Electroordered dipole suspension	US 442019 A	252/583	257/E51.012; 257/E51.023; 359/296; 516/31; 516/32; 516/33
19990226	9	Variable optical attenuator for optical fibers - has electrode to which voltage is impressed and transmittance of polymer dispersed liquid crystal layer is changed	JP 11052339 A		

	Issue Date	Page s	Title	Document ID	Current OR	Current XRef
1	20030612	46	DISPLAY APPARATUS, LIQUID CRYSTAL DISPLAY APPARATUS AND DRIVING METHOD FOR DISPLAY APPARATUS	US 20030107538 A1	345/87	
2	20030403	21	Image display device	US 20030063062 A1	345/102	
3	20030313	11	Method and apparatus for driving liquid crystal display	US 20030048247 A1	345/87	
4	20021010	11	DRIVE CIRCUIT FOR DISPLAY APPARATUS	US 20020145583 A1	345/98	
5	20020912	19	Liquid crystal display device and display device	US 20020126078 A1	345/87	
6	20020110	59	Display method for liquid crystal display device	US 20020003522 A1	345/89	
7	20020103	22	Driving method for liquid crystal device	US 20020000962 A1	345/87	
8	20011220	13	Column electrode driving circuit for use with image display device and image display device incorporating the same	US 20010052897 A1	345/204	
9	20011108	24	Liquid crystal display apparatus	US 20010038371 A1	345/87	
10	20030610	29	Liquid crystal device and display apparatus including the device	US 6577289 B1	345/87	345/97; 349/134
11	20030408	130	Method and device for displaying image signals and viewfinder	US 6545653 B1	345/87	345/100; 345/103; 345/90; 348/446; 348/448; 348/453; 348/793
12	20021119	10	Drive circuit for display apparatus	US 6483496 B2	345/98	345/208; 345/690
13	20011204	35	Color display apparatus	US 6326981 B1	345/695	345/694

Issue Date	Page #	Title	Document ID	Current OR	Current XRef
14 20010417	289	Method and apparatus for driving an active matrix display panel	US 6219113 B1	349/42	345/98; 349/43; 349/45
15 20010123	16	Plasma addressed electro-optical display	US 6177914 B1	345/60	345/87; 345/94; 349/36
16 19990126	20	Driving method for a liquid crystal display apparatus	US 5864328 A	345/95	345/210; 345/211; 345/89
17 19990126	22	Method of driving liquid crystal display device and liquid crystal display device	US 5864327 A	345/90	345/95; 345/96
18 19970902	21	Driving method for a liquid crystal display	US 5663744 A	345/95	345/94; 345/96
19 19970211	86	High efficiency light valve projection system	US 5602679 A	359/640	345/32; 348/744; 348/760
20 19940405	68	High efficiency light valve projection system with decreased perception of spaces between pixels and/or hines	US 5300942 A	345/32	345/589; 345/84; 345/90; 348/749; 348/761; 348/833; 353/122; 353/38
21 19880628	4	LIQUID CRYSTAL DISPLAY DEVICE AND DRIVING METHOD	JP 63155029 A		345/87; 349/143

	Issue Date	Page s	Title	Document ID	Current OR	Current XRef
1	20030612	46	DISPLAY APPARATUS, LIQUID CRYSTAL DISPLAY APPARATUS AND DRIVING METHOD FOR DISPLAY APPARATUS	US 20030107538 A1	345/87	
2	20030116	33	Image display method	US 20030011614 A1	345/589	
3	20020912	27	DISPLAY DEVICE, GAMMA CORRECTION METHOD, AND ELECTRONIC EQUIPMENT	US 20020126106 A1	345/204	
4	20020627	17	Process for producing liquid crystal device and driving method of the device	US 20020080102 A1	345/87	
5	20020613	17	COLOR LIQUID CRYSTAL DISPLAY	US 20020070911 A1	345/88	257/E27.111
6	20020530	18	Color liquid crystal display	US 20020063670 A1	345/87	
7	20020502	18	Process for producing liquid crystal device and driving method of the device	US 20020050966 A1	345/87	
8	20011011	16	Liquid crystal display	US 20010028430 A1	349/139	
9	20010927	18	Process for producing liquid crystal device	US 20010023739 A1	156/244.22	156/273.9
10	20030408	130	Method and device for displaying image signals and viewfinder	US 6545653 B1	345/87	345/100; 345/103; 345/90; 348/446; 348/448; 348/453; 348/793
11	20021015	30	Liquid crystal device or apparatus comprises pixels of at least one of three primary colors having a pixel size different from those of pixels of the other colors	US 6466285 B1	349/95	349/106; 349/109; 349/8; 349/84

Issue Date	Page s	Title	Document ID	Current OR	Current XRef
12 20021008	26	Display device, gamma correction method, and electronic equipment	US 6462735 B2	345/204	345/63; 345/87; 345/89; 348/674; 382/167; 382/274
13 20011016	17	Liquid crystal display having an off driving voltage greater than either zero or an optical characteristics changing voltage	US 6304304 B1	349/33	345/94
14 20001017	47	Driving method for optical apparatus	US 6133894 A	345/89	345/87; 349/25
15 20000314	40	Optical modulation or image display system	US 6037922 A	345/89	349/25
16 19990105	44	Driving method for display apparatus	US 5856814 A	345/89	345/87; 349/25
17 19950725	47	Display device and display system using the same	US 5436635 A	345/92	345/90; 345/96; 345/98

			Hits	Search Text	DBs
1	L1	7		maximum adj transmittance adj voltage	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
2	L2	1071		maximum adj transmittance	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
3	L3	2572		color near LCD	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
4	L4	28971		RGB	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
5	L5	67	2 and (3 or 4)		USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
6	L6	7867		color near reproducibility	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
7	L7	4	5 and 6		USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
8	L8	14446		transmittance and voltage	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
9	L9	281	6 and 8		USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
10	L10	3112		(345/87-88).cc1s.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
11	L11	594		(345/102).cc1s.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB
12	L12	31253		349/\$.cc1s.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB

			Hits	Search Text	DBs
13	L13	90	9 and 12	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB	
14	L14	30	9 and 345/\$.cc1s.	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB	
15	L15	3194	transmittance and (applied adj voltage)	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB	
16	L16	567	15 and 345/\$.cc1s.	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB	
17	L17	105	4 and 16	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB	
18	L18	21	6 and 16	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB	
19	L20	5	2 and 18	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB	
20	L21	2574	R adj light	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB	
21	L22	7330	G adj light	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB	
22	L23	11338	B adj light	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB	
23	L24	705	21 and 22 and 23	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB	
24	L25	17	2 and 24	USPAT; US- PG PUB; EPO; JPO; DERWENT; IBM TDB	

	Issue Date	Page S	Title	Document ID	Current OR	Current XRef
1	20030729	35	Liquid-crystal panel driving device, and liquid-crystal apparatus	US 6600470 B1	345/89	345/102; 345/87; 349/162
2	20030429	16	Liquid crystal display and projector using the same	US 6556267 B2	349/129	349/130
3	20030128	65	Alignment treatment of liquid crystal display device	US 6512564 B1	349/124	349/129; 349/130; 349/136
4	20021203	15	Vertical alignment liquid crystal display having improved driving voltage control	US 6490013 B2	349/33	345/94
5	20021008	68	Semiconductor device and method for manufacturing the same	US 6462723 B1	345/82	257/365; 257/366; 257/640; 257/72; 345/100; 345/204; 345/211; 345/212; 345/90; 345/92; 345/96; 345/98; 438/157; 438/638
6	20020514	44	Spatial light modulator and a method for driving the same	US 6388649 B1	345/89	345/94; 345/97
7	20020312	27	YUV-RGB digital conversion circuit and picture display device and electronic equipment using the same	US 6356277 B1	345/603	345/604
8	20011127	15	IPS-LCD having electrodes' characteristics	US 6323927 B1	349/141	349/138; 349/139
9	20011113	14	IPS-LCD having correlation of electrodes and substrates	US 6317183 B1	349/141	349/117

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20011016	17	Liquid crystal display having an off driving voltage greater than either zero or an optical characteristics changing voltage	US 6304304 B1	349/33	345/94 345/103; 345/204; 345/90; 349/74; 349/77; 349/78; 349/83
20010515	49	Liquid crystal display device with low power consumption and high picture quality	US 6232938 B1	345/88	349/130; 349/131
20010213	14	Liquid crystal display and projector using the same Low color dispersion liquid crystal display	US 6188456 B1	349/113	349/131
20001205	14	Reflection type liquid crystal display	US 6157425 A	349/88	252/299.63; 349/129; 349/42
20000801	11	Forming polymer networks with red, green and blue sub-pixels by applying different bias voltages while exposed to a UV light	US 6097466 A	349/143	349/86; 349/92
20000111	15	Parallel field liquid crystal display with substantially straight data and common electrodes inclined at an angle to a gate line	US 6014194 A	349/88	349/128; 349/139
19991130	15	Reflection type color liquid crystal display apparatus	US 5995186 A	349/141	349/102; 349/76
19990914	50	Liquid crystal display device having a wide view angle	US 5936693 A	349/139	349/106; 349/107; 349/109; 349/138
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19981110	10	Liquid crystal display apparatus	US 5835175 A	349/119	349/121 349/114;
19980825	48	Projection type display apparatus	US 5798805 A	349/10	349/67; 349/95; 353/31
19960618	26	Display device	US 5528257 A	345/99	345/94
19950718	47	Liquid crystal device with pixel electrodes in an opposed striped form	US 5434690 A	349/8	349/136; 349/143; 349/144; 349/180
19931026	25	Video signal processing circuit for improving contrast for an LCD display	US 5257108 A	348/674	348/677; 348/678; 348/695

Type	L #	Hits	Search Text	DBs
1	BRS	L1	652	345/88.ccls. USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
2	BRS	L3	0	1 and 2 USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
3	BRS	L4	7686	(345/87-100).ccls. USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
4	BRS	L5	9	2 and 4 maximum near (driving adj voltage) USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
5	BRS	L2	129	RGB and LCD USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
6	BRS	L6	3841	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
7	BRS	L7	0	2 and 6 (upper adj limit) near (driving adj voltage) USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
8	BRS	L8	17	345/89.ccls. USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
9	BRS	L10	809	upper adj limit USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
10	BRS	L11	118154	voltage near driving USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
11	BRS	L12	28899	11 and 12 USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
12	BRS	L13	1074	

Type	L #	Hits	Search Text	DBs
13	BRS	L14	13	10 and 13 USPAT; US-PPGPUB; EPO; JPO; DERWENT; IBM TDB
14	BRS	L15	23385	349/\$.cc1s. USPAT; US-PPGPUB; EPO; JPO; DERWENT; IBM TDB
15	BRS	L16	73	13 and 15 USPAT; US-PPGPUB; EPO; JPO; DERWENT; IBM TDB
16	BRS	L17	21665	maximum near voltage USPAT; US-PPGPUB; EPO; JPO; DERWENT; IBM TDB
17	BRS	L18	58	10 and 17 USPAT; US-PPGPUB; EPO; JPO; DERWENT; IBM TDB

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1	20030703	20	Apparatus and method for driving a liquid crystal display	US 20030122753 A1	345/87	
2	20030327	86	Liquid crystal display device	US 20030058393 A1	349/117	
3	20030227	13	Organic electroluminescence display panel	US 20030038595 A1	313/509	257/E27.119
4	20021205	30	Liquid crystal display device	US 20020180922 A1	349/143	
5	20020725	56	Liquid crystal display device and method for producing the same	US 20020097362 A1	349/130	
6	20020307	11	Method for driving liquid crystal of thin film transistor liquid crystal display	US 20020027539 A1	345/87	
7	20020207	36	Image processing system and method, and image display system	US 20020015104 A1	348/459	348/625
8	20010823	23	Liquid crystal display device	US 20010015782 A1	349/129	349/187
9	20010705	30	LIQUID CRYSTAL DISPLAY DEVICE AND METHOD FOR PRODUCING THE SAME	US 20010006410 A1	349/178	349/130; 349/96
10	20030128	84	Liquid crystal display with at least one phase compensation element	US 6512561 B1	349/118	349/129
11	20020903	30	Liquid crystal display device	US 6445434 B1	349/123	349/124
12	20020205	54	Liquid crystal display device and method for producing the same	US 6344883 B1	349/32	349/178; 349/84
13	20010313	32	Liquid crystal display device and method for producing the same	US 6201592 B1	349/156	

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20001107	14	Picture display device and method of driving picture display device	US 6144373 A	345/204	345/211; 345/58; 345/89; 345/96
20000919	28	Liquid crystal display element and a projection type liquid crystal display apparatus	US 6122021 A	349/10	349/86; 349/89
20000125	28	Liquid crystal/polymer composite with high optical anisotropy and low dielectric anisotropy to lower hysteresis exhibiting transparent and light scattering states	US 6018378 A	349/89	349/167; 349/177; 349/88
19990511	33	Camera	US 5903788 A	396/373	396/282
19980512	52	Active matrix LCD device with image signal lines having a multilayered structure	US 5751381 A	399/46	257/59; 257/72; 257/E29.147;
19950103	20	Liquid crystal display element and a projection type liquid crystal display apparatus	US 5379137 A	349/86	349/10; 349/177; 349/139
19931123	22	Liquid crystal display apparatus for providing a gray scale and a projection type liquid crystal display apparatus	US 5264953 A	349/33	348/761; 349/37;
19930601	23	Projection type active matrix polymer dispersed liquid crystal display apparatus with particles of liquid crystal material randomly oriented	US 5216531 A	349/93	349/106; 349/107; 349/177; 349/89

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22 19930323	16	Liquid crystal display element and a projection type liquid crystal display apparatus	US 5196952 A	349/10	349/177; 349/86
23 19920407	21	Active matrix liquid crystal display element and a projection type active matrix liquid crystal display apparatus	US 5103327 A	349/10	349/177; 349/35; 349/86; 349/93
24 20020531	9	Liquid crystal display device for office automation apparatus, has pixel and counter electrodes that are spaced so that relative transmittance of liquid crystal layer reaches specific value	JP 2002156643 A		

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1	20021231	13	Electro-optical device	US 6501097 B1	257/72
2	20021126	33	D/A conversion circuit having n switches, n capacitors and a coupling capacitor	US 6486812 B1	341/144
3	20020101	49	Active matrix type liquid crystal display device using driver circuits which latch-in data during horizontal blanking period	US 6335778 B1	349/151
4	20011127	41	Liquid crystal display device and process for production thereof	US 6323918 B1	349/48
5	20011113	42	Single crystal silicon arrayed devices with optical shield between transistor and substrate	US 6317175 B1	349/45

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20010109	17	Liquid-crystalline medium	US 6171665 B1	428/1.1
2001219	44	Active matrix substrated, liquid crystal apparatus using the same the display apparatus using such liquid crystal apparatus	US 6163352 A	349/106
2000905	56	Liquid crystal display apparatus	US 6115017 A	345/92
2000620	32	Liquid crystal device and liquid crystal display apparatus	US 6078371 A	349/95
2000620	44	Active matrix substrate, liquid crystal apparatus using the same and display apparatus using such liquid crystal apparatus	US 6078368 A	349/48
2000502	45	Active matrix display in which adjacent transistors share a common source region	US 6057897 A	349/48
19980609	40	Non-single crystal semiconductor apparatus thin film transistor and liquid crystal display apparatus	US 5763904 A	257/66
19971230	24	Array having multiple channel structures with continuously doped interchannel regions	US 5703382 A	257/72

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14 19970325	43	Active matrix substrate	US 5614730 A	257/59	
15 19970304	19	Circuitry with gate line crossing semiconductor line at two or more channels	US 5608557 A	349/42	
16 19970204	18	Array with metal scan lines controlling semiconductor gate lines	US 5600155 A	257/72	
17 19951212	42	Transferred single crystal arrayed devices including a light shield for projection displays	US 5475514 A	438/27	

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18 19940531	55	A slide assembly for projector with active matrix moveably mounted to housing	US 5317436 A	349/5
19 19921006	10	Thin film semiconductor device and method for fabricating the same	US 5153702 A	257/347
20 19920317	21	Thin film transistor	US 5097297 A	257/347

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1	20030403	16	Liquid-crystal display device	US 20030063057 A1	345/87
2	20030320	32	Display driving apparatus and liquid crystal display apparatus using same	US 20030052851 A1	345/89
3	20030320	21	Liquid crystal display device	US 20030052846 A1	345/87
4	20030306	33	Driving method of liquid crystal display device and liquid crystal display device	US 20030043103 A1	345/87
5	20030116	33	Image display method	US 20030011614 A1	345/589
6	20030102	69	Semiconductor device and method for manufacturing the same	US 20030001832 A1	345/204
7	20021024	19	Driving method of liquid crystal display device and liquid crystal display device	US 20020154078 A1	345/87
8	20020912	19	Liquid crystal display device and display device	US 20020126078 A1	345/87
9	20020718	45	Method and circuit for driving liquid crystal display, and portable electronic device	US 20020093475 A1	345/87
10	20020613	17	COLOR LIQUID CRYSTAL DISPLAY	US 20020070911 A1	345/88
11	20020418	38	Processing of image data supplied to image display apparatus	US 20020044122 A1	345/88
12	20020314	16	Display device and liquid crystal projector	US 20020030651 A1	345/87

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13 20011220	13	Column electrode driving circuit for use with image display device and image display device incorporating the same	US 20010052897 A1	345/204
14 20030401	37	Method and apparatus for driving the display device, display system, and data processing device	US 6542143 B1	345/98
15 20021008	68	Semiconductor device and method for manufacturing the same	US 6462723 B1	345/82
16 20020723	48	Driving circuit for electro-optical device, driving method therefor, DA converter, signal line driving circuit, electro-optical panel, projection type display device, and electronic equipment	US 6424331 B1	345/98
17 20020514	44	Spatial light modulator and a method for driving the same	US 6388649 B1	345/89

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18	20020312	27	YUV-RGB digital conversion circuit and picture display device and electronic equipment using the same	US 6356277 B1	345/603
19	20011225	44	Display device	US 6333724 B1	345/5
20	20011023	56	Electro-optical device, electronic equipment, and method of driving an electro-optical device	US 6307681 B1	359/645
21	19920218	91	Stacked display panel construction and method of making same	US 5089810 A	345/88

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1	20030130	22	Image capturing apparatus	US 20030020814 A1	348/220.1	
2	20021017	23	Three-dimensional image capturing device	US 20020149694 A1	348/370	
3	20020711	32	Image sensing apparatus	US 20020089596 A1	348/302	
4	20010816	11	INFRARED FILTERLESS PIXEL STRUCTURE	US 20010013898 A1	348/272	257/440; 257/E27.135; 348/273
5	20030401	37	Method and apparatus for driving the display device, display system, and data processing device	US 6542143 B1	345/98	345/205; 345/89; 345/92; 348/674; 348/792
6	20021001	11	Infrared filterless pixel structure	US 6459450 B2	348/309	348/282; 348/311
7	19990622	17	Magenta-white-yellow (MWY) color system for digital image sensor applications	US 5914749 A	348/273	348/280
8	19981110	21	Device for measuring a glow center of a display device	US 5835135 A	348/191	348/189; 445/63
9	19970415	17	Method of driving a liquid crystal display device	US 5621479 A	348/648	348/647; 348/791
10	19950919	29	Projected image displaying apparatus and a method of correcting color unevenness therein	US 5452019 A	348/655	348/658; 348/745
11	19940524	19	Gamma correction and white balance adjustment method and apparatus for projection display	US 5315378 A	348/655	348/181; 348/658; 348/675; 348/745; 348/761
12	19931026	25	Video signal processing circuit for improving contrast for an LCD display	US 5257108 A	348/674	348/677; 348/678; 348/695
13	19910514	12	Automatic optical filter displacing circuit	US 5016091 A	348/224.1	348/361

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14	19910409	19	Liquid crystal television	US 5006933 A	348/791	348/733; 348/838
15	19890808	13	Video camera body and detachable lens each containing a memory for storing signals indicative of spectral characteristics	US 4855814 A	348/224.1	

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1	20021128	8	Method for creating a color microlens	US 20020176037 A1	349/95	257/E31.128
2	20021121	21	Transselective LCD in which reflected light passes through color filters twice, transmitted light passes through color filter only once, but also passes through an additional layer of cholesteric liquid crystal or band-pass filter	US 20020171794 A1	349/117	
3	20020822	114	HIGH-BRIGHTNESS COLOR LIQUID CRYSTAL DISPLAY PANEL EMPLOYING LIGHT RECYCLING THEREIN	US 20020113921 A1	349/96	
4	20020131	11	Color LCD device	US 20020012084 A1	349/108	
5	20011213	8	Integrated microlens and color filter structure for a display device	US 20010050737 A1	349/95	257/E31.128
6	20030204	11	Color LCD device	US 6515727 B2	349/143	349/108; 349/109
7	20021224	68	Illumination system and projector	US 6497488 B1	353/38	349/5; 349/7; 349/8; 349/9; 353/20; 353/31; 353/33; 353/34; 353/37
8	20021112	54	Reflective projector	US 6478429 B1	353/31	349/8; 353/20
9	20020813	8	Method for creating a color microlens array of a color display layer	US 6433844 B1	349/95	438/30

	Issue Date	Pages	Title	Document ID	Current OR	Current XRef
10	20020723	8	Liquid crystal color filter with integrated infrared blocking	US 6424392 B1	349/106	252/299.01; 349/104; 349/182; 349/97
11	20011225	44	Display device	US 63333724 B1	345/5	345/3.1; 349/60; 349/61
12	20010821	22	Reflection type liquid crystal display device	US 6278507 B1	349/106	349/113; 359/891; 430/7
13	20010807	7	Integrated microlens and color filter structure	US 6271900 B1	349/95	216/26; 257/294; 257/E31.128; 349/106; 430/321; 438/30; 438/65; 438/70
14	20010327	9	Liquid crystal color filter with integrated infrared blocking	US 6208393 B1	349/106	349/104; 349/97
15	20001212	35	TN-mode liquid crystal display apparatus having improved gray scale display characteristics	US 6160602 A	349/139	349/122; 349/138; 349/158
16	20001121	24	LCD using liquid crystal of ferroelectric and/or antiferroelectric phase having pretilt angle of 1 degree or less	US 6151090 A	349/134	349/124; 349/125; 349/129; 349/174
17	20001107	23	Liquid crystal panel and manufacturing method the same with a thickness of the adhesive layer adjusted to eliminate a step difference	US 6144425 A	349/73	349/122; 349/155

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18 20000926	9	Method of manufacturing plasma display panel	US 6124918 A	349/155	313/586; 313/587; 349/156; 445/23; 445/24
19 20000111	91	LCD device with polarizers having polarizing and transmittance characteristics	US 6014195 A	349/96	349/113; 349/80
20 19991228	37	TN-mode liquid crystal display wherein a leveling layer is formed on the surface of an uneven electrode	US 6008875 A	349/139	349/113; 349/129
21 19990914	50	Reflection type color liquid crystal display apparatus	US 5953090 A	349/121	349/102; 349/76
22 19981124	28	Liquid crystal display device	US 5841492 A	349/74	
23 19981027	45	Computer-based image display systems having direct and projection modes of viewing	US 5828427 A	349/5	349/15; 349/57; 349/58; 349/64; 349/65; 349/68; 349/70; 349/77; 349/86
24 19980901	35	Backlighting construction for use in computer-based display systems having direct and projection viewing modes of operation	US 5801793 A	349/5	349/15; 349/57; 349/58; 349/64; 349/65; 349/68; 349/70; 349/77; 349/86; 359/465

	Issue Date	Pages	Title	Document ID	Current OR	Current XRef
25	19980825	48	Projection type display apparatus	US 5798805 A	349/10	349/114; 349/67; 349/95; 353/31
26	19980310	19	Projection-type color display device	US 5726719 A	349/8	349/114
27	19980106	23	Color filter for liquid crystal display device and method for producing the color filter	US 5705302 A	430/7	205/109; 205/122; 349/106; 427/164
28	19971202	20	Reflection type liquid crystal display device having comb-shaped wall electrode	US 5694188 A	349/139	
29	19950718	47	Liquid crystal device with pixel electrodes in an opposed striped form	US 5434690 A	349/8	349/136; 349/143; 349/144; 349/180
30	19920616	25	Color display utilizing twisted nematic LCDs and selective polarizers	US 5122887 A	349/80	349/180; 349/97
31	19920218	91	Stacked display panel construction and method of making same	US 5089810 A	345/88	345/208; 345/212; 345/590; 349/34; 349/6; 349/78

	Issue Date	Pages	Title	Document ID	Current OR	Current XRef
1	19970415	17	Method of driving a liquid crystal display device	US 5621479 A	348/648	348/647; 348/791

Type	L #	Hits	Search Text	DBs
1 BRS	L1	27716	RGB or (color adj LCD)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
2 BRS	L2	617	control near transmittance	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
3 BRS	L3	35	1 and 2	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
4 BRS	L4	21089	maximum near voltage	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB
5 BRS	L5	1	3 and 4	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB